

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.:

Group Art Unit:

Inventor: B. Arman

Filed: Concurrently

Title: Resonant Linear Motor
Driven Cryocooler System

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

In accordance with 37 CFR 1.51, 1.56 and 1.97 to 1.99, the following is a relevance statement on each citation listed on attached form PTO-1449, and is made of record to assist the Patent & Trademark Office in its examination of this application:

U.S. 5,129,232 – Minas et al. discloses a system whereby the vibration loads produced by a cryocooler are isolated from a superconducting magnet and cryostat through the use of flexible laminated copper connectors and rubber mounts. There is no disclosure of a resonant linear motor driven cryocooler system wherein vibrations from the resonant linear motor are isolated from the cryocooler by work transfer piping comprising connecting tubing and preferably a dashpot and wherein the connecting tubing has a volume which exceeds the internal stroke volume of the resonant linear motor, and thus this patent neither discloses nor suggests the claimed invention.

U.S. 5,363,077 – Herd et al. discloses a magnetic resonance imaging system having a cryocooler penetration assembly and a superconducting coil assembly wherein the weight of the cryocooler penetration assembly is supported independent of the superconducting coil assembly which, together with flexible

connections, isolates the vibrations of the cryocooler coldhead from the superconducting coil assembly. There is no disclosure of a resonant linear motor driven cryocooler system wherein vibrations from the resonant linear motor are isolated from the cryocooler by work transfer piping comprising connecting tubing and preferably a dashpot and wherein the connecting tubing has a volume which exceeds the internal stroke volume of the resonant linear motor, and thus this patent neither discloses nor suggests the claimed invention.

U.S. 6,374,617 – Bonaquist et al. discloses a pulse tube system wherein a product fluid such as hydrogen is preferably precooled and then liquefied, subcooled and/or densified by heat exchange with ultra cold gas generated by a pulsing compression wave which rejects heat into a cryogen fluid heat sink. There is no disclosure of a resonant linear motor driven cryocooler system wherein vibrations from the resonant linear motor are isolated from the cryocooler by work transfer piping comprising connecting tubing and preferably a dashpot and wherein the connecting tubing has a volume which exceeds the internal stroke volume of the resonant linear motor, and thus this patent neither discloses nor suggests the claimed invention.

U.S. 6,378,312 – Wang discloses a pulse tube cryorefrigerator having integrated reservoirs and housing for a rotary valve, valve plate and drive motor. There is no disclosure of a resonant linear motor driven cryocooler system wherein vibrations from the resonant linear motor are isolated from the cryocooler by work transfer piping comprising connecting tubing and preferably a dashpot and wherein the connecting tubing has a volume which exceeds the internal stroke volume of the resonant linear motor, and thus this patent neither discloses nor suggests the claimed invention.

U.S. 6,578,364 – Corey discloses a mechanical resonator for a thermoacoustic device which includes a member for mimicking dynamic

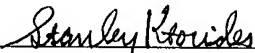
conditions at a position of the housing, and a linear suspension element suspending the member in the housing. There is no disclosure of a resonant linear motor driven cryocooler system wherein vibrations from the resonant linear motor are isolated from the cryocooler by work transfer piping comprising connecting tubing and preferably a dashpot and wherein the connecting tubing has a volume which exceeds the internal stroke volume of the resonant linear motor, and thus this patent neither discloses nor suggests the claimed invention.

U.S. 6,604,363 – Corey et al. discloses a method for matching an acoustic load and an acoustic driver in a resonant acoustic system, and the acoustic system so formed, comprising a matching volume positioned between the acoustic driver and load that is substantially greater than a stroke volume of the driver. There is no disclosure of a resonant linear motor driven cryocooler system wherein vibrations from the resonant linear motor are isolated from the cryocooler by work transfer piping comprising connecting tubing and preferably a dashpot and wherein the connecting tubing has a volume which exceeds the internal stroke volume of the resonant linear motor, and thus this patent neither discloses nor suggests the claimed invention.

U.S. 6,640,553 – Kotsubo et al. discloses a pulse tube refrigeration system having a pulse generator, a regenerator and a pulse tube, comprising a tapered work transfer tube interposed between the pulse generator and the regenerator. There is no disclosure of a resonant linear motor driven cryocooler system wherein vibrations from the resonant linear motor are isolated from the cryocooler by work transfer piping comprising connecting tubing and preferably a dashpot and wherein the connecting tubing has a volume which exceeds the internal stroke volume of the resonant linear motor, and thus this patent neither discloses nor suggests the claimed invention.

U.S. 6,644,038 – Acharya et al. discloses a pulse tube refrigeration system wherein the pulse tube working gas is cooled to a defined first stage temperature and is brought to a defined second stage temperature by operation of a regenerator and pulse tube, which are in flow communication through a cold heat exchanger, prior to providing refrigeration to a high temperature superconductor. There is no disclosure of a resonant linear motor driven cryocooler system wherein vibrations from the resonant linear motor are isolated from the cryocooler by work transfer piping comprising connecting tubing and preferably a dashpot and wherein the connecting tubing has a volume which exceeds the internal stroke volume of the resonant linear motor, and thus this patent neither discloses nor suggests the claimed invention.

Respectfully submitted,



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